

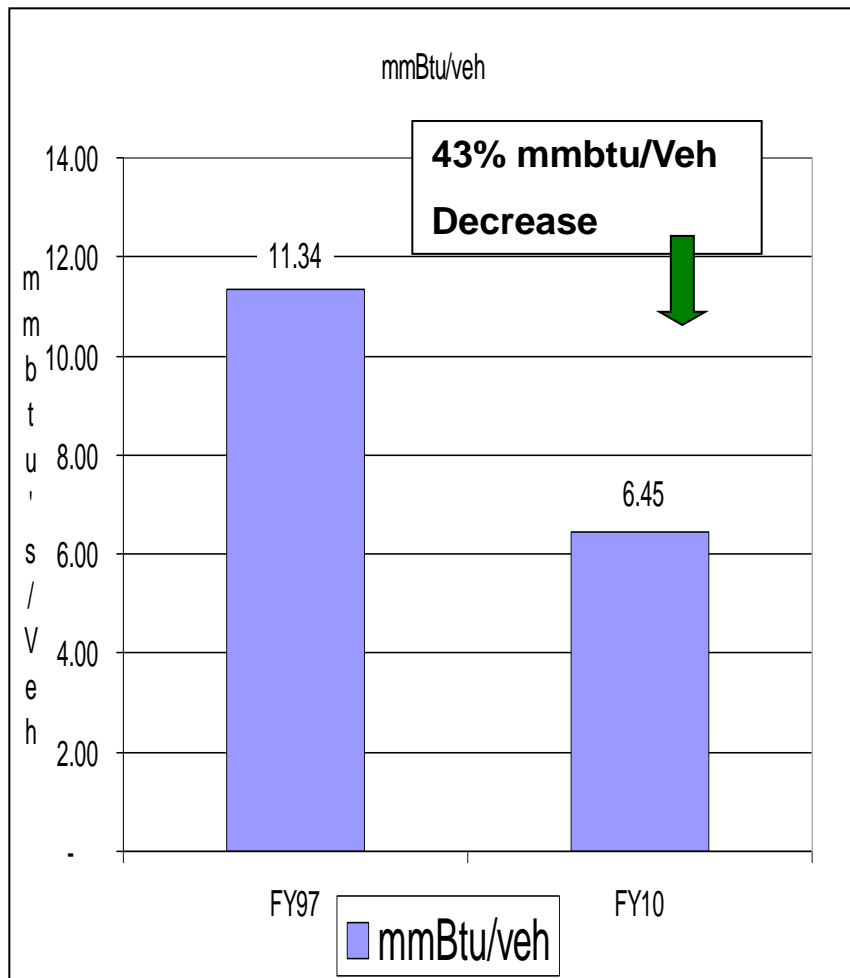
TMMK ENERGY  
REVIEW  
&  
STRATEGIC  
PLANNING

# AGENDA:

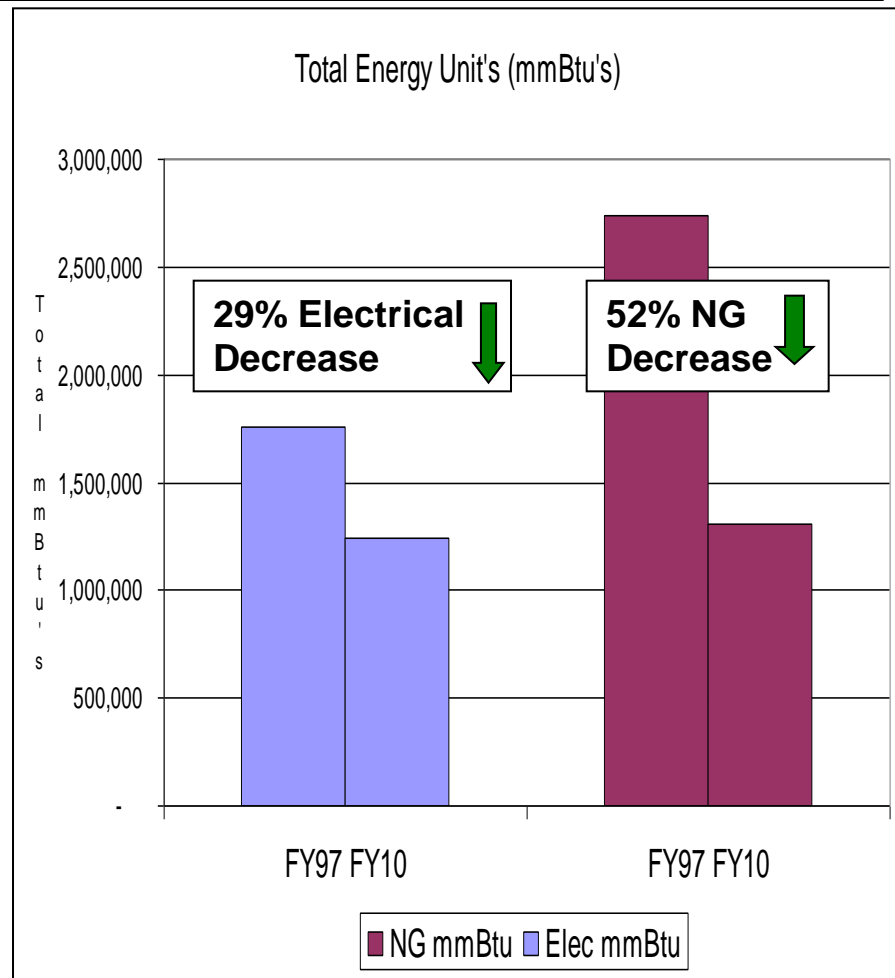
- Historical Performance
- Future Projections
- Recommended Actions

# Historical Energy Consumption Summary

Began energy mgt program FY98, FY97 is base year



FY97 Veh. Production: 396K FY10 Veh. Production 395K

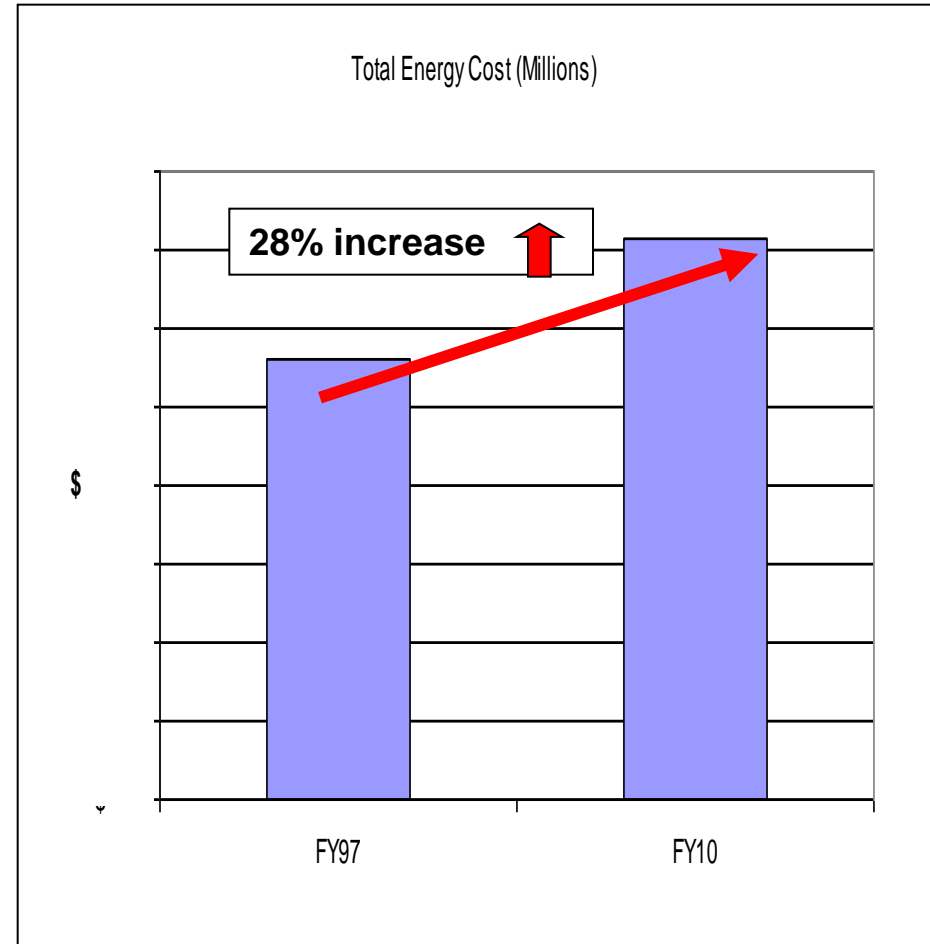
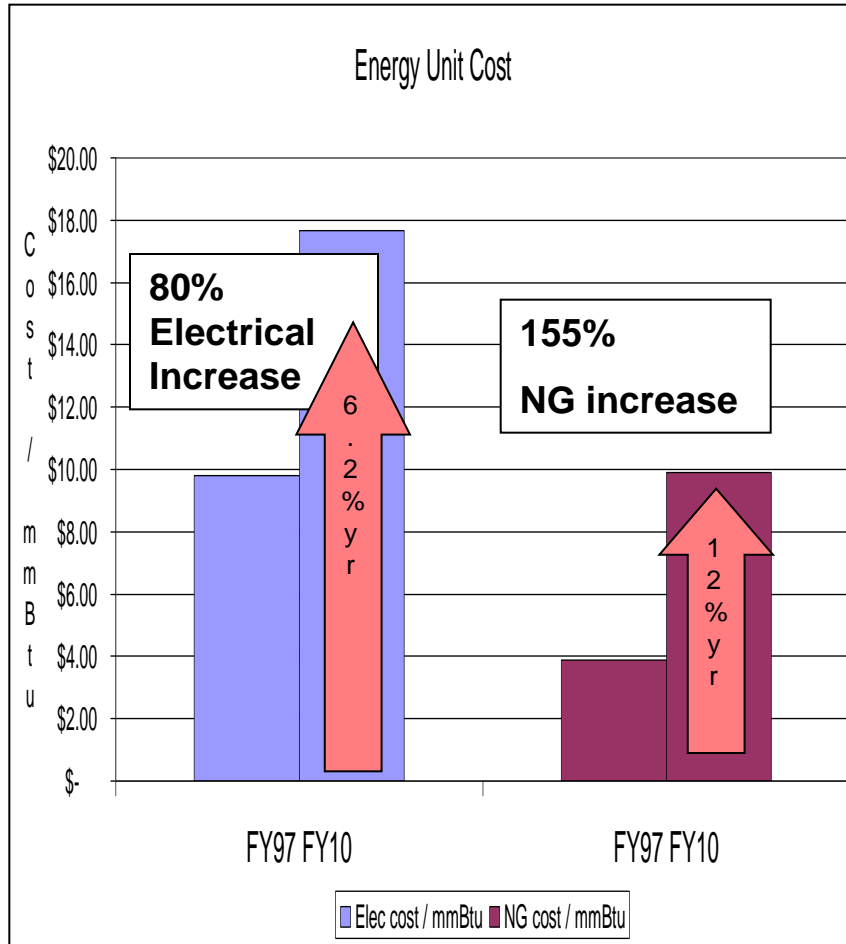


All information includes Powertrain

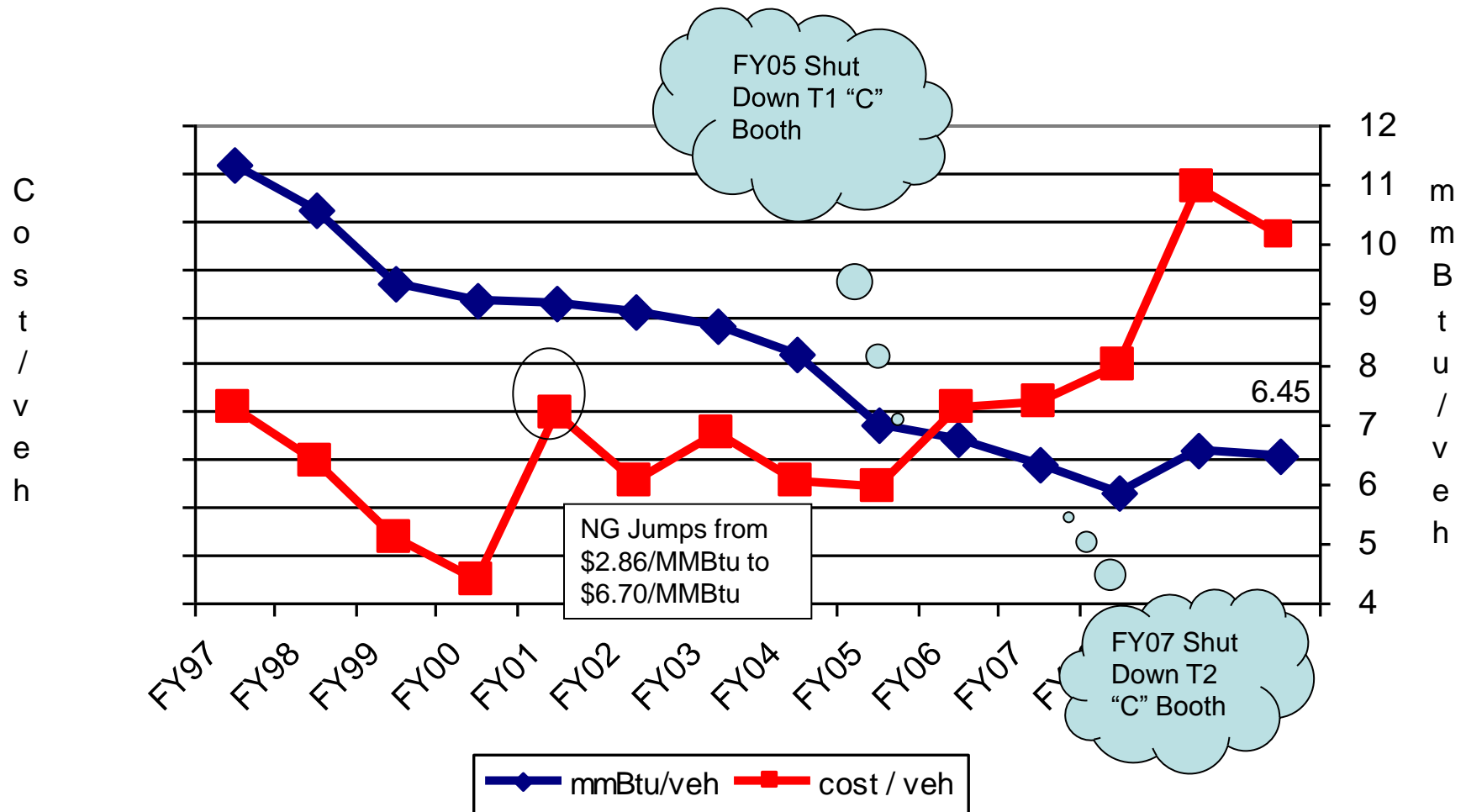
# Historical Cost Summary

Began energy mgt program FY98, FY97 is base year

FY97 Veh. Production: 396K FY10 Veh. Production 395K



# Historical Cost and consumption/Vehicle (includes Powertrain)

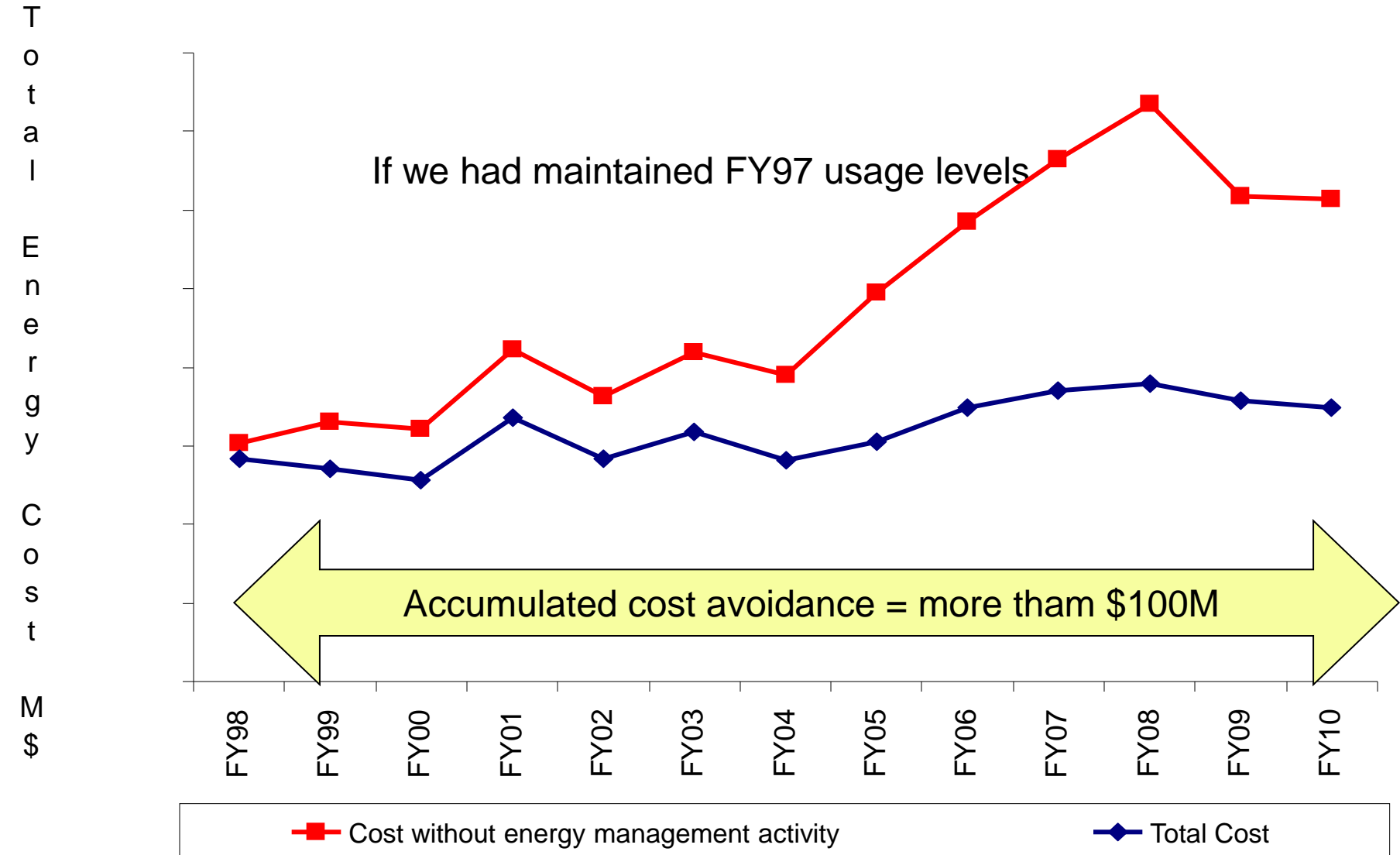


# Impact of Energy Management Program

## What would our cost be if we had done nothing?

FY98 volume- 437K veh.

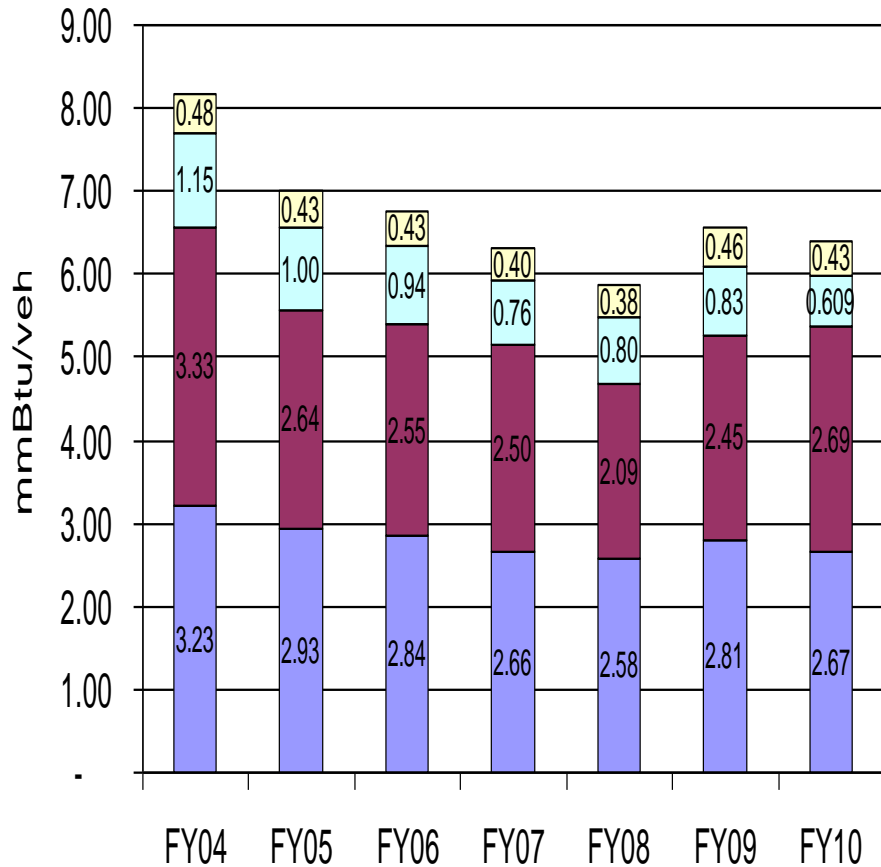
FY10 volume-395K veh.



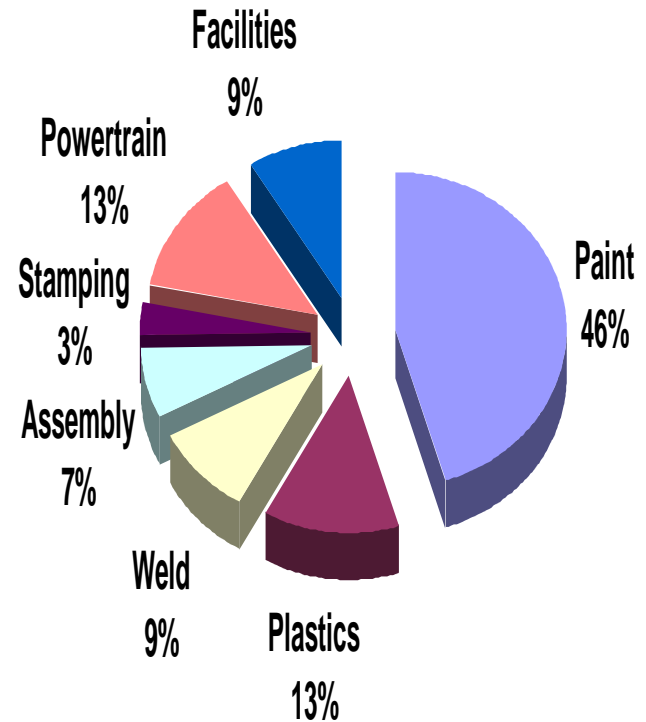
# How are we Using our Energy?

FY10 Utility  
Consumption

TMMK W Powertrain



Total Energy

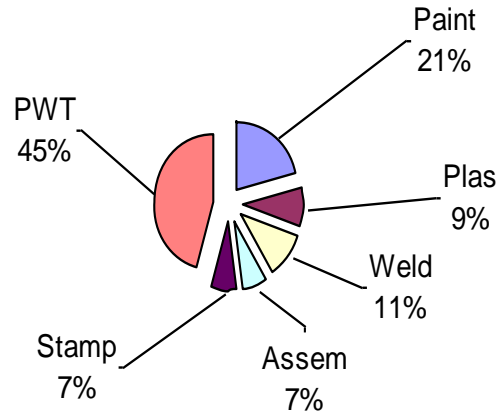


# How are we spending our Energy Dollar?

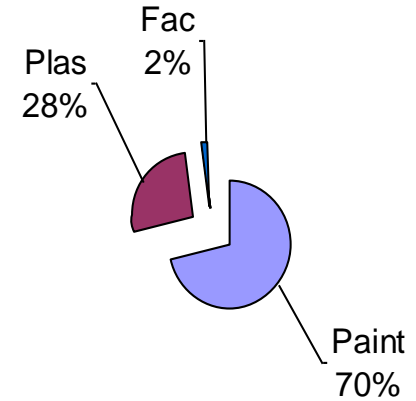
FY10 energy Utility Cost

CA	8
Steam	7%
NG	31%
Electric	54%
Total	100%

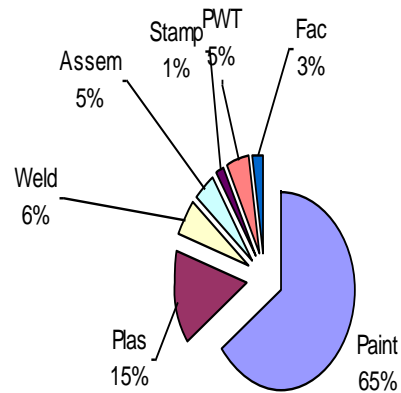
Compressed Air



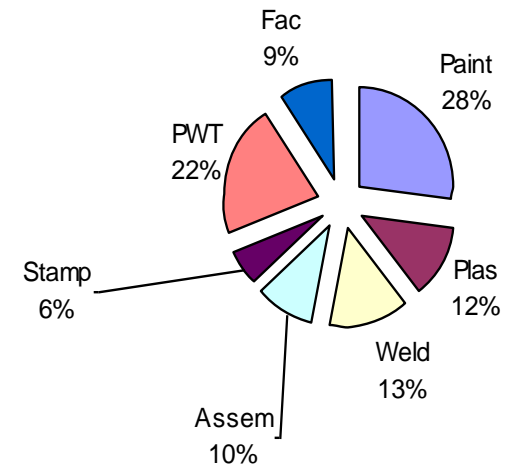
Steam



Natural Gas



Electricity

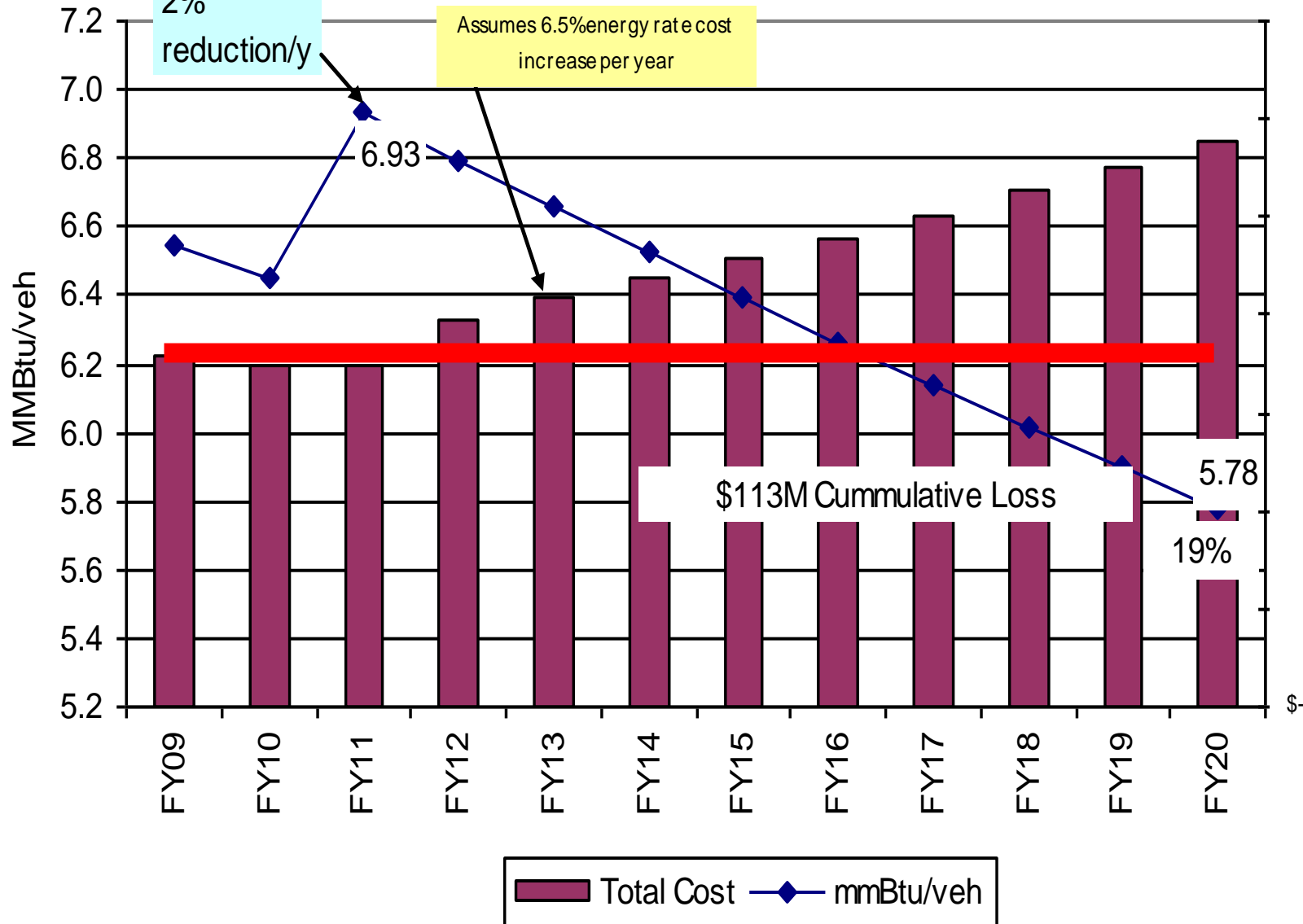




# Projected BAU Costs at Target Usage Based on 4 yr Volume Forecast Carried Forward

Assumes  
2%  
reduction/y

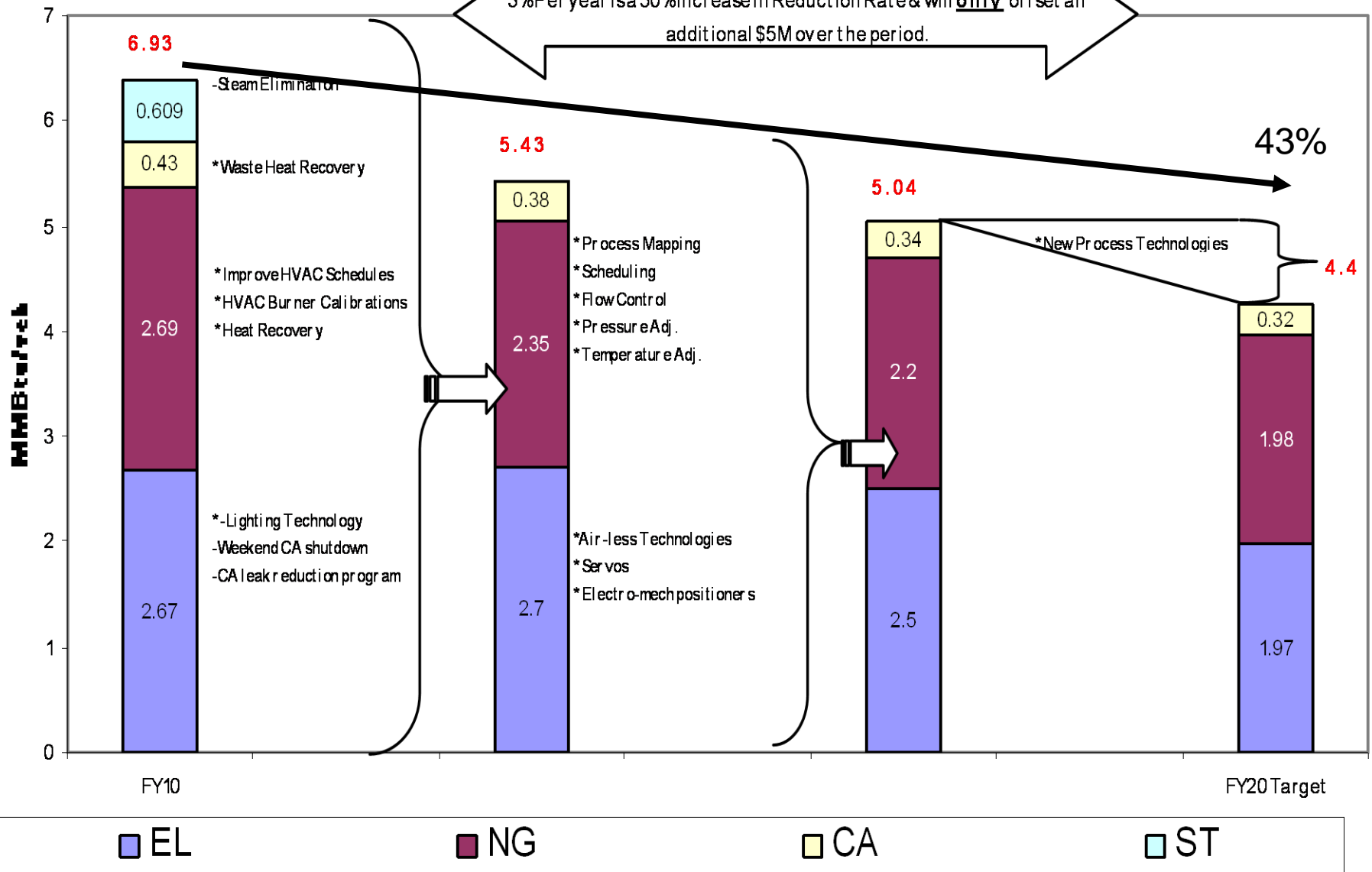
Assumes 6.5% energy rate cost  
increase per year



61  
%

# We Need More Aggressive Targets To Offset Cost Increases

3% Per year (a 50% increase in Reduction Rate & will only offset an additional \$5M over the period.



We Must Focus To Reduce Energy In The Manufacturing Processes and then - Pursue Alternative Energy Sources.

Natural Gas

Steam  
Generatio

✓ Improved  
Controls

✓ System  
Tuning

✓ Improved  
Tech

✓ Heat  
Recovery

✓ Elimination

Process  
Heat

Improved  
Controls

✓ Burner  
Tuning

✓ Improved  
Sched

✓ Heat  
Recovery

Solar  
Thermal

Geo  
Thermal

VOC  
Destructio

Improved  
Controls

✓ Burner  
Tuning

✓ Improved  
Sched

✓ Heat  
Recovery

New Tech

Building  
Heat

✓ Improved  
Controls

✓ Burner  
Tuning

✓ Improved  
Sched

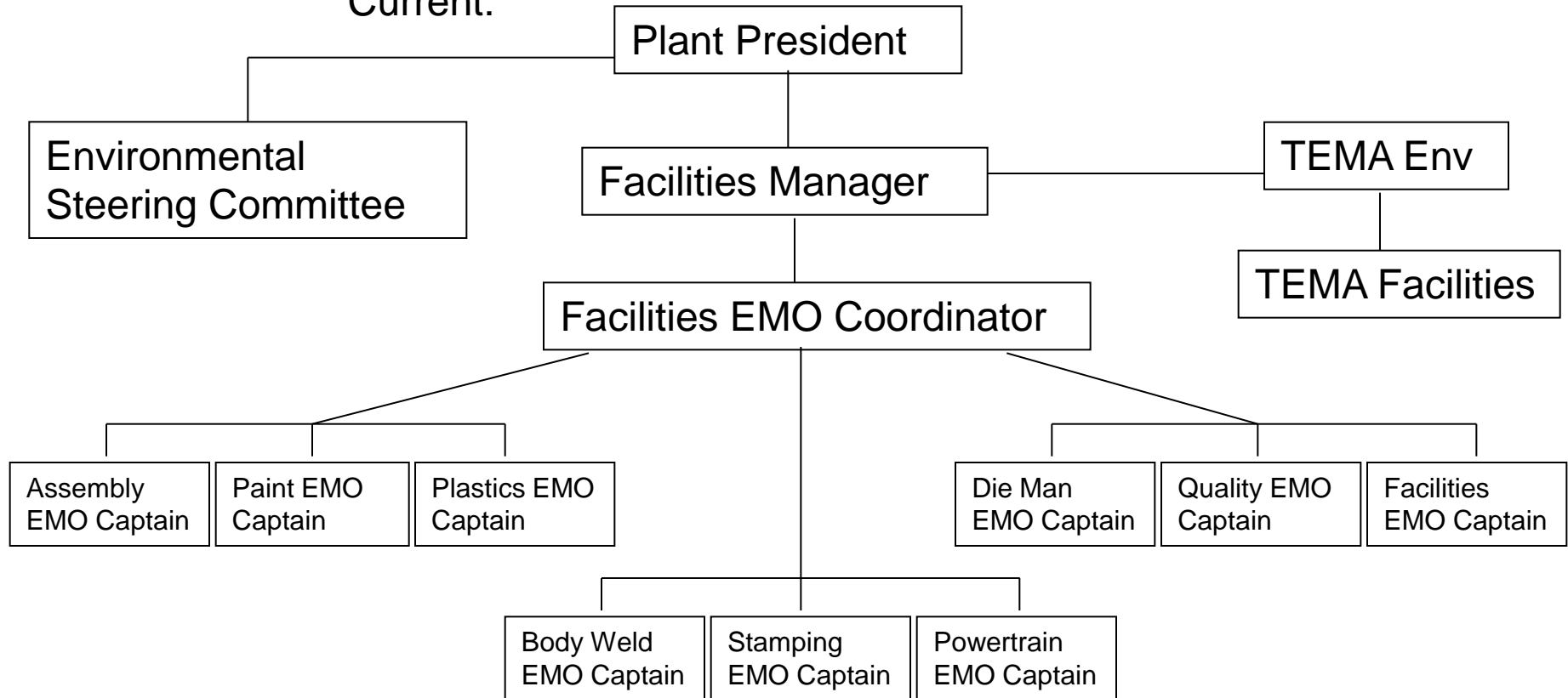
Heat  
Recovery

Solar  
Thermal

New Tech

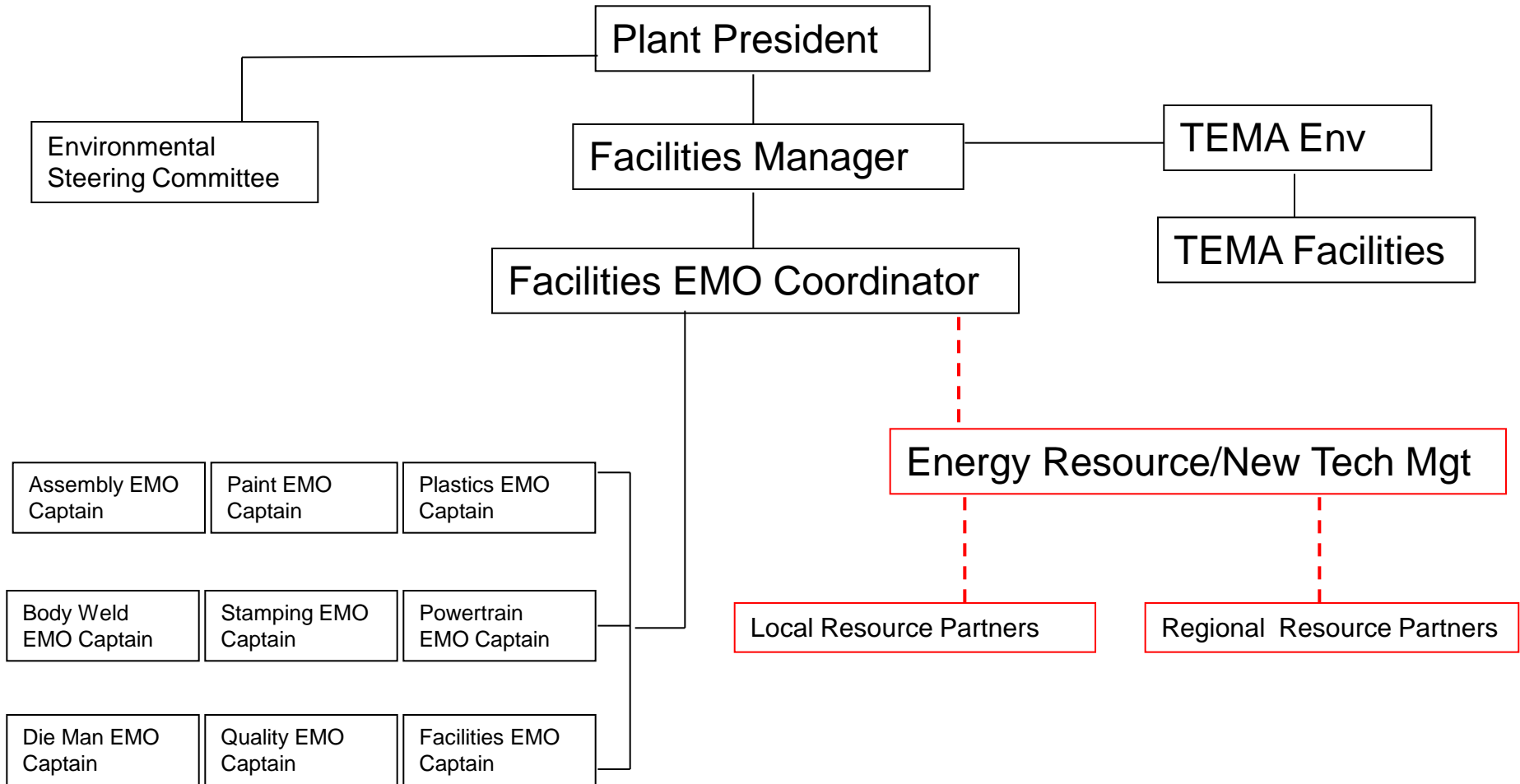
# Energy Management Org

Current:

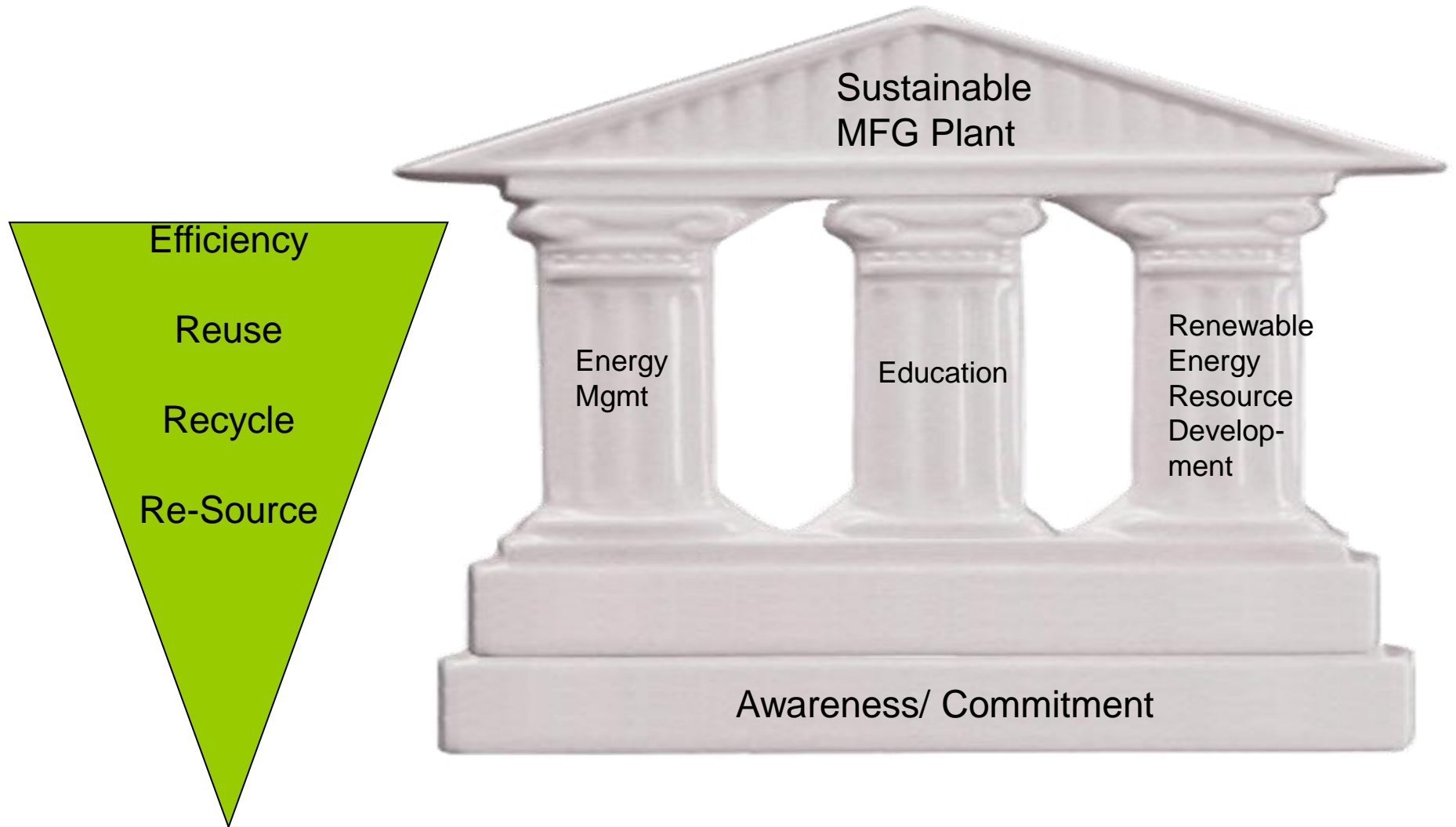


# Expand current Energy Management System Scope and Vision

Future:



# TOYOTA GOAL SUSTAINABLE PLANT



Recommendations: Support the goal of sustainable plant

## EFFICIENCY 1<sup>st</sup> -

- Energy Management
  - Develop method to map, reduce, & sustain energy usage at each process
  - Investigate & apply new technology in the process
- Focus to improve commitment & awareness
  - PE ---Technology, process applications
  - Production --- Usage control, standards, TPS, TPM
- Add Renewable Energy/New Tech Mgmt members
  - Seek local resource partners where available/feasible
  - Seek regional resource partners to support where elements are unavailable locally to scale

# Incorporate Into Each Dept. Plans

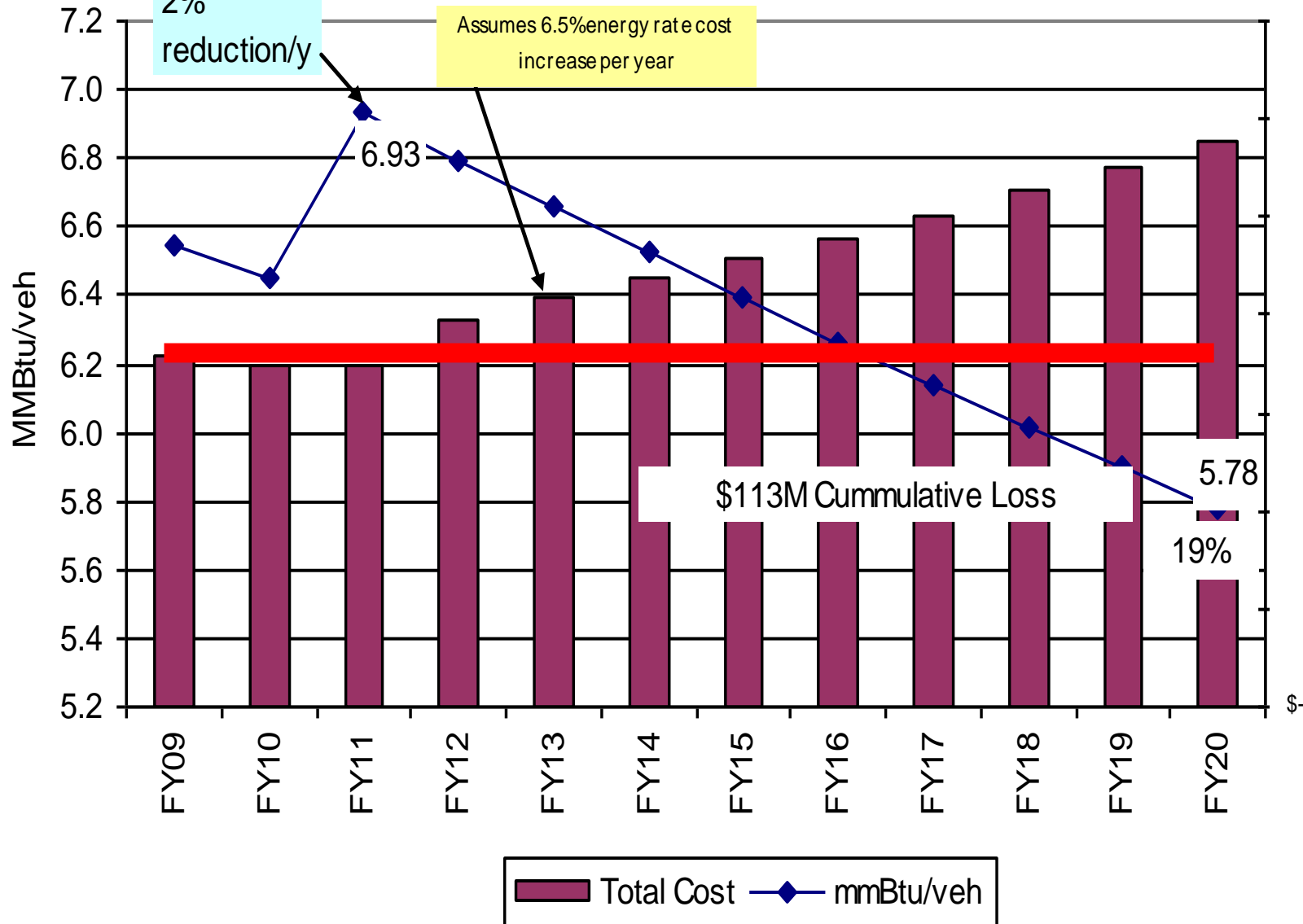
1	Raise supply mix set point for 508 bldg. chiller system Note: Need to add a valve on 36" main line and also hot-tap into main re-turn line.		unit installed and operational	Dicem	Schedule		<div>→</div>															Ù
					Energy (MMBTU/Veh)	Plan	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002		
						Actual	0.001	0.040	0.030	0.002	0.0002	0.002								0.012		
					Water (Gal/Veh)	Plan	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.800		
						Actual	8.10	31.81	1.635	4.06	17.35	26	9.53							14.0		
					VOC (Kg/M2)	Plan														0.0		
						Actual														0.0		
					Non-Saleable Waste (Kg/Veh)	Plan														0.00		
						Actual														0.00		
					CO2 Emissions (Met Tons/mo)	Plan														0		
						Actual														0		
					Cost Savings (\$/mo)	Plan	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	\$3,102	37,224.00		
						Actual	\$10,321	\$10,438	\$13,464	\$9,560	17,259.38	16,588.00	1,566.25							79,196.75		



# Projected BAU Costs at Target Usage Based on 4 yr Volume Forecast Carried Forward

Assumes  
2%  
reduction/y

Assumes 6.5% energy rate cost  
increase per year



61  
%

Thank You!

Questions?